Message

From: Kay, Robert [rtkay@usgs.gov]
Sent: 6/1/2017 8:02:54 PM
To: Nordine, John [nordine.john@epa.gov]
Subject: Review of 2016 Remedial Options Report

John--I h ave reviewed Revision 2 of the 2016 Remedial Options Report for the Techalloy/Central Wire site in Union, IL. The document is dated May 2016 and was prepared by Autumwood Consultants.

Section 1.1--picky point, but figure 1-2 is referenced to show the extent of the plume. This figure does not show the presence of contamination. It's not essential, but the report would benefit from a figure showing TVOC concentrations in groundwater.

Section 1.2: somewhat picky point, but the text includes the sentence "In a conference call between EPA and CWI on November 1, 2016, it was apparently no longer acceptable for the plume to reach any well". This text implies that at some time before Nov. 1, 2016, USEPA was willing to accept the presence of contamination in the Ex. 6 Personal Privacy (PP) or residential wells in the area. It's my understanding this implication is incorrect and the quoted sentence should be removed from the report.

I know I have been sounding the alarm about the effectiveness of EW-2 for capturing the plume, but before CW goes off on putting in a new extraction system, they should characterize the aquifer and the plume near the current extraction wells to see if capture is occurring.

Section 2.1: waiting for the plume to get within 50-100 ft of a water-supply well before replacing the well seems highly risky from the perspective of protecting human health. This risk is particularly severe for a high-capacity wells like the Ex. 6 Personal Privacy (PP), which induces a fairly substantial groundwater velocity. Plume characterization once a year would likely allow for the plume to impact the well before we knew it was present. If the decision is made to go forward with well replacement, the process should begin now for the Ex. 6 Personal Privacy (PP) well. I'd recommend at least a 500 ft perimeter for the residential wells.

Note that if CW drills to the St. Peter aquifer, the water is likely to contain combined radium above the MCL. Radium can be treated readily with a water softener at a residence, but it is unlikely that it would be treated for an irrigation well.

If EW-3 is constructed, what will happen to operation of EW-1 and EW-2? Will they continue to pump? or be abandoned? These wells should continue to operate. Shutting them off likely would substantially increase the time until remediation of the plume is completed and, in the long term, threaten the residential wells along Route 176.

Has any thought been given to just replacing EW-2?

Section 2.2: These issues don't necessarily need to be addressed in this document, but they should be considered as part of the selection process.

Installation of an extraction well in the vicinity of the Ex. 6 Personal Privacy (PP) also would require characterization of the hydraulic properties of the aquifer in this area.
a) A constant-discharge aquifer test would be required to assess capture. The aquifer test done near the CW property is not adequate for this purpose due to the large change in aquifer thickness between the two locations.

b) Per previous comments, assessment of capture requires more than identification of drawdown, it requires the ability to assess water-level altitude in the affected areas of the plume. At a minimum, CW is going to need to assess water-level elevations in various parts of the plume so the effects of drawdown on capture can be at least somewhat accurately determined. Autumwod's "In lieu of a complete set of data to determine the plume capture zone, CWI has used the Theis distance-drawdown equation to approximate the capture zone" is adequate for a VERY preliminary assessment of the potential efficacy of the proposed extraction well, but additional characterization is absolutely required before a realistic assessment of the potential efficacy of the proposed extraction well can be determined.
c) What will happen to the existing irrigation well when the extraction well is put into operation? Will it be abandoned? Abandoned for a deep well? Will it continue to operate? The status of the existing well has substantial implication for the efficacy of the proposed extraction system and it needs to be discussed.
d) Where does Autumwood propose to put EW-3? What is it's proposed open interval?
e) It my understanding the acceptability of discharging EW-3 water to the Kishwaukee River is dependent on water-quality considerations other than DCE--such as dissolved oxygen, iron, manganese, etc. If I am correct, Autumwood is going to need to evaluate the potential need to pre-treat the discharge water, and assess its effect on costs.
f) Part of the reason the plume has the configuration it does at the Nursery is because of the effects of pumping from the irrigation well. The effects of pumping/stopping pumping at the irrigation well on the plume needs to be considered. If the irrigation well is to continue pumping, the effects of EW-3 on the irrigation well's ability to be pumped needs to be evaluated.
e) Although the leading edge of the plume has fairly low VOC concentrations, concentrations of individual VOCs above 20 ppb are present in the nursery area. There is no guarantee that VOC concentrations at EW-3 would remain below levels that allow untreated discharge to the river.

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